

Revised Remedial Plan for the Metal Bank Superfund Site

The United States and the Utility Third Party Defendants ("Utility Group") agree to this conceptual plan for remediation of the Metal Bank Cottman Avenue Site ("Site"). In September, 2002, the Utility Group submitted a Final Design Report ("Final Design") for remediation of the Site. EPA approved the Final Design in January, 2003, but the remedy in the Final Design was not implemented due to the ongoing litigation. Following approval of the Final Design, additional Site data was collected. Analysis of the new data, together with the continued evaluation of remedial options, lead the United States and the Utility Group to develop jointly a revised remedial plan. The Utility Group will agree to revise the Final Design to incorporate the changes set forth in this document, submit the revised Final Design to EPA for review and approval, and, following EPA's approval, implement the remedy set forth in the revised Final Design in accordance with a Consent Decree to be negotiated by the parties and submitted to the Court for approval. If this Revised Remedial Plan or the revised Final Design does not resolve any matter relating to the remedy, the parties shall rely on any applicable provisions in the Record of Decision issued by EPA in December of 1997 as modified by the two Explanations of Significant Difference issued in September 2000 and December 2000.

The revised remedial plan consists of the following components:

- Excavation of Courtyard area soils, and placement of a soil cap over the Courtyard area and former Buildings 2, 3, 4, 5 and 6;
- Power washing and surface coating of Courtyard Building 7;
- Installation of a sheet pile wall at the southwestern corner of the Site;
- Removal of the underground storage tank (UST) near the southwestern corner of the Site;
- Excavation of Southern Area "hot spots" SA-2, SA-3 and SA-4/5 and offsite disposal of those soils¹;
- Excavation of near-shore sediments and capping of other sediment areas shown in the past to contain total PCBs in concentrations greater than 1 part per million (ppm);
- Pre- and post-construction monitoring; and
- Institutional controls.

A. Courtyard Soils

Two "hot spot" areas of PCB-contaminated surface soils in the Courtyard area (labeled CY-1 and CY-2) will be excavated to a depth of two feet below ground surface (bgs). The excavated soil from CY-1 and CY-2 will be disposed of offsite. The remainder of the Courtyard Area (other than building foundations and footers) will be excavated to a depth of one foot bgs.

¹ Limited re-use of excavated soils from SA 4/5 will be considered as outlined below in the AR200001 section entitled "Waste Pile Sampling and Disposal".

Excavated soils from outside of CY-1 and CY-2 containing less than 25 ppm of total PCBs may be placed into one of the Southern Area soil excavations at a distance of at least 100 feet from the river and mudflat, at least four feet above the top of the groundwater table, and beneath the soil cap. The entire Courtyard will then be backfilled to grade and a one-foot soil cap will be placed over the Area.

B. Courtyard Buildings

The floor of Building 7 and the rail spur in Building 7 will be power washed and sealed with an appropriate coating to be selected by the performing parties and approved by EPA. Wash fluids will be treated on-site and discharged to the City sewer, subject to receiving City approval. The foundations of Buildings 2, 5 and 6 and the basements of Buildings 3 and 4, which contain demolition debris, will be capped with a one-foot soil cap. No verification samples will be taken for the Courtyard buildings.

C. Sheet Pile Wall

A sheet pile wall will be installed around the southern corner of the Site as depicted in Drawings C-26 to C-31 of the Final Design.

D. UST Removal and Off-site Disposal

The UST will be removed and disposed of in accordance with the Final Design.

E. Southern Area Excavation

1. SA-2

The SA-2 area will be excavated to the lateral extent and depths set forth in the Final Design. Soils excavated from SA-2 will be disposed of offsite. The deepest part of SA-2 is approximately 90 feet x 30 feet. The bottom of the excavation shall be divided into three 30-foot grids. In each grid one composite sample will be taken. Each composite sample will include five (5) grab samples randomly selected from the bottom of the excavation. The three composite samples from the bottom of the excavation will be analyzed for total PCBs as Aroclor by USEPA Method SW846-8082. After receipt of the sample results, one or more of the following will occur:

1. If total PCBs are reported below 25 parts per million (ppm) in all three of the composite samples, then the excavation will be backfilled with clean fill material.
2. If total PCBs are reported above 25 ppm in any one or more of the three composite samples, then excavation will continue downward two feet in each 30-foot grid with a

sample result in excess of 25 ppm.

3. For each grid where an additional two (2) feet deep of soil is excavated, an additional composite sample then will be taken at the bottom of the deeper excavation and will be analyzed as set forth above.
4. If total PCBs are reported below 25 ppm in the second round of verification samples, then the excavation will be backfilled with clean fill material.
5. If total PCBs are reported above 25 ppm in any of the second round verification samples, then the excavation of the 30-foot grid surrounding that sample will proceed downward to one (1) foot below the groundwater table. This will be the maximum depth of the excavation.
6. The SA-2 excavation then will be backfilled with clean fill material.

2. SA-3

The SA-3 area will be excavated the lateral extent and depths set forth in the Final Design. Soils excavated from SA-3 will be disposed of offsite. The maximum depth of excavation is already 1 foot below the groundwater table. Therefore, the excavation will be complete when performed as set forth in the Final Design, and no verification samples are needed. After the excavation depths have been achieved, the excavation will be backfilled with either sediment that has been excavated from the mudflats/river, soil from other areas (the Courtyard, certain portions of SA-4/5) that are authorized for redeposit on-site, or clean fill material.

3. SA-4/5 Excavation

The SA-4/5 area will be excavated to the lateral extent and depths set forth in the Final Design, as modified by the changes described below. The Final Remedial Design will be revised to include these modifications. Figure 1 depicts the seven excavation areas into which SA-4/5 has been divided.

a. Lateral Extent of Soil/Oil Excavation Toward River and Mudflat

The lateral extent of the SA-4/5 excavation will be extended by 10 feet northwest from the location of sample SAB-19C towards B-15 and west towards the sheet pile wall. Figure 1 will be revised to depict the expanded excavation area and included in the revised Final Design.

In addition, the lateral extent of the SA-4/5 excavation will be further extended if one or more of the following three conditions are met:

- (1) Oil is present and flowing in from the sidewall of the excavation in 1/16th-inch (or greater) thickness on the water table after 2 to 3 days of stabilization. If this condition exists, the excavation will continue until oil is no longer observed flowing into the excavation;
- (2) The performing parties decide to continue excavating in area E5 or area E3 toward the sheet pile wall to the toe of the slope; or
- (3) Verification sampling demonstrates PCB levels at or above 25 ppm along the sidewall (verification sampling is discussed in sub-section d below).

b. Excavation Below the Groundwater Table

Area E7 (comprised of E3 and E6) will be excavated to a depth of 5 feet below the top of the groundwater table, in the manner and under the conditions described below. EPA and the Utility Group commit to work together to design and achieve such excavation in a reasonable, safe, and cost-effective manner.

Area E7 will be excavated as follows:

- First, excavation will occur in the area surrounding E3 and E6 to create a level, stable work platform for excavating equipment, at a height approximately 4 feet above the groundwater table (elevation 5 feet), and with a bench width of approximately 10 feet to 20 feet surrounding the excavation. This should remove some of the overburden sidewall pressure in the area.
- Second, the surface area of the excavation area extending below the groundwater table will be defined by survey.
- Third, excavation will proceed in an approximate 20-foot wide pass across the width of the excavation area closest to the river and mudflat using equipment determined to be technically feasible and effective. If successful, this pass will remove approximately one third of the material desired (i.e., approximately 330 cubic yards).
- If the first pass is completed successfully, a second pass across the width of the excavation will be attempted.
- If the second pass is completed successfully, a third pass will be attempted.
- If the third pass is completed successfully, excavation will continue, advancing away from the river, until completing excavation of area E7.
- Once the excavation of area E7 is complete, including the stabilization and monitoring period, area E7 will be backfilled with clean, imported fill. Backfilling will take place using the excavation equipment only, without other means of compaction.

Each of the following conditions also will apply to the deep excavation of area E7:

- Unless required by the RA contractor and agreed to by the parties, no shoring of the excavation will be installed, and the deep excavation will take place “in the wet” (i.e., without dewatering).
- If the Resident Engineer and/or the Site Safety Officer determine that an excavation

sidewall threatens to collapse in towards the open excavation area, or if other unsafe working conditions arise during excavation of a sidewall to the intended depth, a decision whether to continue or discontinue additional excavation of the sidewall in that area will be made by the performing parties' Site Safety Officer and/or Resident Engineer in conjunction with EPA.

- Only surface groundwater will be pumped from the excavation in an attempt to remove oil.
- Personnel will not be permitted to enter the excavation or stand above the excavation within a projected 3 to 1 slope from the toe of the excavation.
- No survey will be performed of the excavation bottom. Instead, the operator of the excavation equipment will use the equipment itself to judge the depth of the excavation.
- The RA contractor hired to perform the work will have the opportunity to review this approach and propose alternative approaches to improve its safety and effectiveness. The parties will consider other methods proposed by the RA contractor but must mutually agree to the alternative method before proceeding with the plan.
- The total volume of excavated soils from area E7 is estimated to be in the range of approximately 1,000 cubic yards.
- The determination as to whether the excavation should be terminated for any of the above reasons, or for other good cause, should be made jointly by the designated representatives of EPA and the Resident Engineer/Site Safety Officer for the performing parties. Disputes would be resolved according to the dispute resolution procedures governing the remediation project.

In the event the approach described above fails, EPA and the Utility Group will consider implementing any reasonable alternatives, with the exception of shoring, taking into consideration the level of effort, scope, worker safety and cost.

c. Capping of Surface Soils in Area E4

Area E4 will be capped with 4 feet of clean soil placed over a geotextile liner. Other than a slight difference in height to maintain a level slope, the other portions of SA-4/5 (E1, E2, E3, E5, E6) will be capped with 2 feet of clean soil over a geotextile liner

d. Verification Sampling

Verification sampling will be performed along the southwestern edge of the sidewall of SA-4/5, in an area bound approximately by sampling points SAB-19C and DOJ-7.

Verification samples will be collected using the excavator bucket from the onsite earth-moving equipment. Each sidewall verification sample will consist of one composite sample per 25 linear feet of the SA-4/5 excavated sidewall on the Mudflat side of the excavation. Each composite sample will consist of five randomly selected sub-samples of the exposed wall face collected at a minimum depth of 6 inches into the exposed wall face. The soil samples will be collected in accordance with appropriate sampling methods and analyzed for total PCBs by

Aroclor method 8082 at an EPA-approved laboratory. The excavator bucket will be properly decontaminated prior to obtaining any verification samples.

After verification sample analytical results are received, a determination for additional excavation within the SA-4/5 area toward the sheet pile wall then can be ascertained. If the composite sample is below 25 ppm total PCBs, the excavation will be complete. If the sample is above 25 ppm total PCBs, either: the excavation will proceed at least an additional 10 feet towards the sheet pile wall, after which an additional sample will be collected, analyzed and evaluated in the same manner as above; or the excavation will continue to the toe of the slope in that 25-foot section of the sidewall.

e. Waste Pile Sampling and Disposal

The intent of the excavation of SA - 4/5 is to remove the "hot spot" soils and dispose of them offsite at a permitted disposal facility. However, EPA will consider future proposals by the performing parties to allow the following soils to remain onsite for use in the Southern Area excavations:

- Soils located on the inland side-slope of the excavation that are on the outside of the previously defined SA-4/5 area and that are excavated to provide a stable side-slope;
- Material consisting of the 6- to 24-inch "cap" previously installed across the site by the site owner; and
- The concrete pad that lies above the underground storage tank.

A decision on the ultimate disposition of the above excavated materials will be made only when more information is available showing that PCB concentrations are less than 25 ppm. EPA will consider a program by the performing parties that includes detailed protocols for the sampling, staging, and disposal of such materials. Additionally, the performing parties must take into account that the interface between the 6-24 inch "cap" and the old surface contains dioxin concentrations of concern to EPA. Therefore, EPA will consider allowing the cap material to remain onsite if the parties can demonstrate that concentrations of dioxins/furans are less than 5 ppb dioxin TEQ or the old cap material is placed under four feet of material and does not threaten groundwater.

F. Delaware River and Mudflat Sediments

Sediments within the reach of land-based equipment, approximately 75 feet from the shore line and 2 to 4 feet from the surface, will be excavated. A sub-aqueous cap will be installed over areas outside the excavation zone that the Final Design identifies for remediation.

Sediments will be excavated at low tide using an extended reach hydraulic excavator. The sediments will be transferred to the Southern Area of the Site for dewatering prior to placement back onto the site. Dewatering liquids will be collected, treated and discharged to the City sewer, subject to receiving City approval, or otherwise properly disposed of. Localized turbidity curtains and silt barriers will be installed around the approximate 75-foot excavation limit, and the excavation will be performed in small phases, to prevent the release of sediments to the river during excavation. The sediment excavation zone is shown in Figure 2. Following excavation of the "75 foot zone", the area will be backfilled with clean sediment as detailed in Appendix B of the Final Design. Following placement of the backfilled sediment, samples of the backfill material will be obtained in the approximate locations shown in Figure 2 to demonstrate the backfill material was properly placed and analyzed for total PCBs to confirm that the backfill material does not contain PCBs greater than those defined in Appendix B of the Final Design.

The areas outside the excavation zone identified in Figure 2 Drawing C-2 will be remediated using a sub-aqueous cap. The sub-aqueous cap will be approximately 24 inches thick. The Final Design will be revised to include a sub-aqueous cap design and monitoring plan for the cap areas.

G. Monitoring Program

The parties agree that the purpose of the monitoring program is to determine the remedy's effectiveness. EPA will use this data to fulfill its statutory obligation to perform a Five Year Review of the remedial action to evaluate its protectiveness of human health and the environment. In order for EPA to make this determination, monitoring is required as a remedy component.

1. Groundwater Monitoring

Groundwater monitoring will be conducted to evaluate the effectiveness of the upland source removal on reducing concentrations of PCBs, dioxin, and PAHs in groundwater. The data gathered will also be used by EPA in conjunction with the river monitoring to ensure the remedy remains protective of the nearby aquatic environment affected by the Metal Bank Site.

- There will be six (6) monitoring wells in locations identified by EPA in the attached *Figure 3*. The frequency of sampling and analysis will be quarterly sampling for the first two years following major physical construction, biannual sampling for the third year, and annual sampling for the fourth and fifth years.
- For the first two years (eight consecutive quarters), monitoring will consist of (a) quarterly sampling and analysis for Total PCBs as Aroclor (Method 8082); and (b) semi-annual sampling and analysis for SVOCs, PCB Congeners (Method 1668) and Dioxins (Method 1613). For the third year, groundwater monitoring will consist of

semi-annual sampling and analysis for Total PCBs as Aroclor (Method 8082), SVOCs, PCB Congeners (Method 1668) and Dioxins (Method 1613). For the fourth and fifth years, groundwater monitoring will consist of annual sampling and analysis for Total PCBs as Aroclor (Method 8082), SVOCs, PCB Congeners (Method 1668) and Dioxins (Method 1613). The sampling program may be modified after five years.

- The groundwater monitoring data will be evaluated to assess the remedy's success in removing the apparent source of contaminants to the aquatic environment.

3. River and Mudflat Monitoring

The monitoring program will provide for sampling and analysis of sediments and the use of appropriate field-derived biota-sediment accumulation factors (BSAFs) to estimate invertebrate bio-accumulation potential. The method of collecting sediment samples will be determined by the parties in consultation with their experts.

- Monitoring locations will include eight (8) sediment sample locations, including one far field reference location to be determined by the parties in consultation with their experts.
- The frequency of sampling and analysis will be bi-annual sampling for the first two years and annual sampling for the third, fourth and fifth years. The sampling program may be modified or reduced after five years.
- Samples will be analyzed for SVOCs, PCB Congeners (Method 1668) and Dioxins (Method 1613).

Releases of contaminants from the Metal Bank Site have resulted in a risk to the aquatic environment. Because the PCB contamination co-occurs with the PAHs and dioxins, the river remediation targeting PCBs greater than 1 ppm will also result in the cleanup of PAHs and dioxin. Therefore, data from the long-term monitoring of sediment will be used to establish the effectiveness of the remedy on the river cleanup. For the contaminants without cleanup criteria – PAHs and dioxins – the sediment data will be evaluated qualitatively with the groundwater data to assess the remedy's effectiveness. PCB sediment data will be evaluated against the 1 ppm cleanup criterion to demonstrate that the remedy is effective with respect to the PCB contamination.

The parties agree to discuss in good faith and to seek agreement on the final elements of the monitoring program, including, but not limited to, the frequency and methods of sample collection.

H. Institutional Controls

Limitations on future use of the site are an essential component to ensure the protectiveness of the remedy. The parties will take affirmative steps to ensure that appropriate institutional and engineering controls are placed on the property by (1) asking Judge Giles to

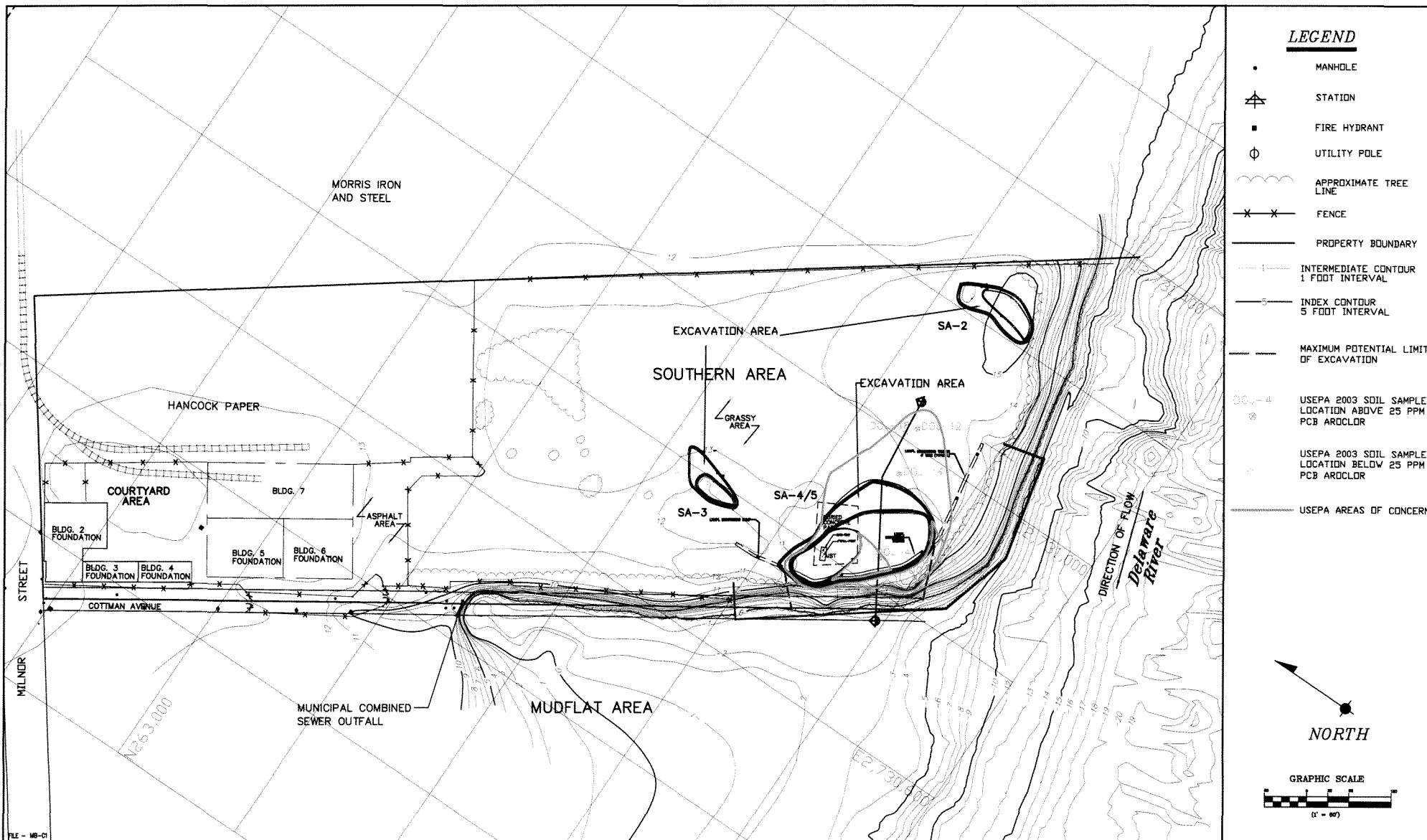
include enforceable limitations on future use of the site in any remedy order that the Court will issue, (2) preparing other documents necessary to ensure that the Court's remedy orders are enforceable against the current and future owners and operators of the site, and (3) enforcing the Court's orders, or requesting that other governmental entities with jurisdiction over the property enforce the Court's orders. Other institutional and engineering controls to be implemented at the Site will include marking of the geotextile liner under the soil cap in the Southern Area, a new fence around portions of the Site, warning signs, and a public education program.

Attachments

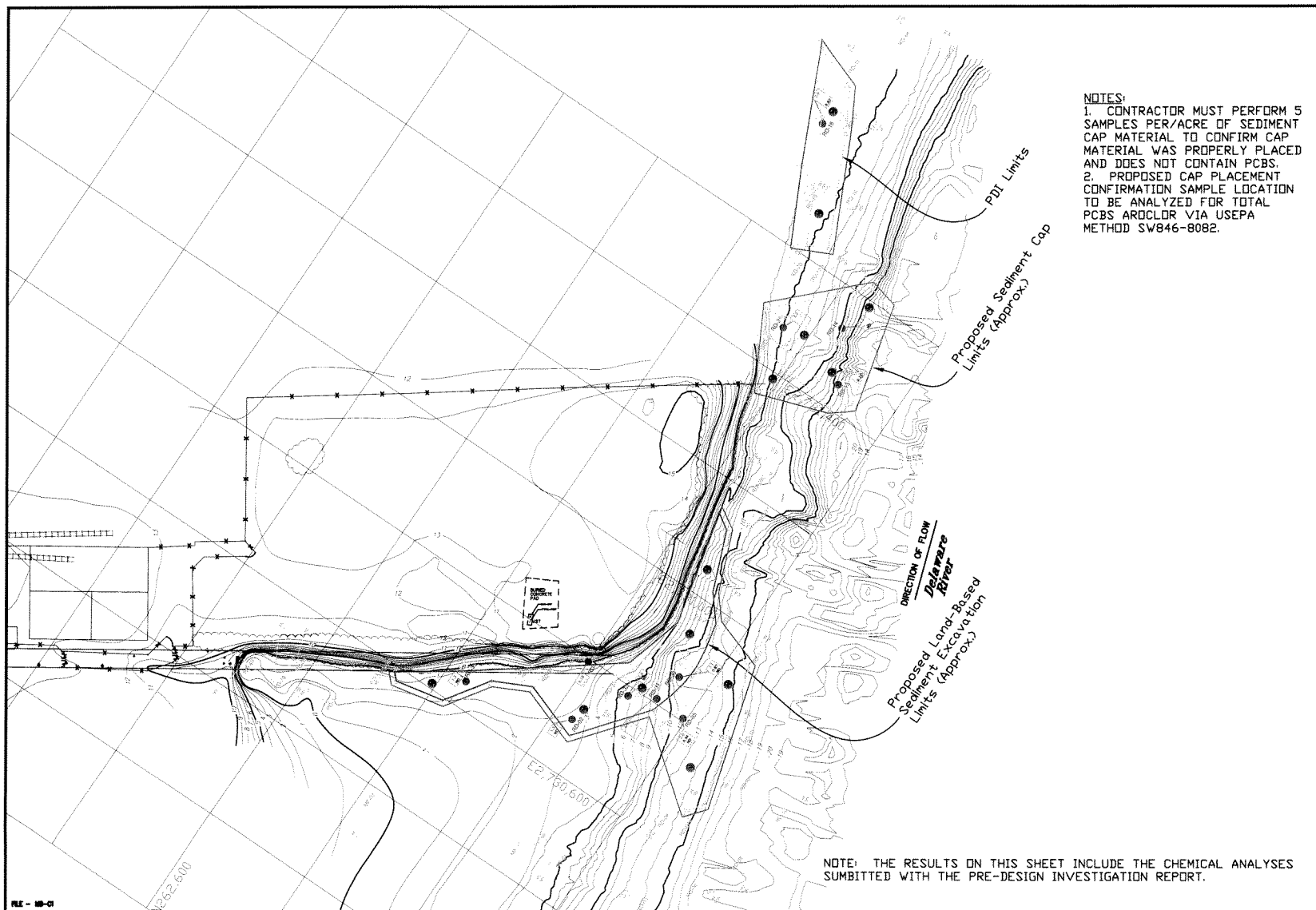
Figure 1 SA-4/5 Excavation Areas

Figure 2 Sediment Excavation Zone

Figure 3 Monitoring Well Locations



NO.		DATE	REVISIONS	APPR.	NO.	DATE	REVISIONS	APPR.	<div>amecEARTH & ENVIRONMENTAL, INC. ONE PLYMOUTH MEETING, SUITE 850 PLYMOUTH MEETING, PA 19462-1308</div>	PREPARED FOR: COTTMAN AVENUE PRP GROUP	<div>METAL BANK NPL SITE PHILADELPHIA, PENNSYLVANIA PROPOSED UPLAND EXCAVATION LOCATION PLAN</div>	
1					6					SUBMITTED TO:		
2					7							
3					8							
4					9							
5					10							
										CONTACT:		
										DRAWN BY: KAM	CHECKED BY: PM	DATE: 05-12-04
										SCALE: AS SHOWN	SHEET: 1 OF 3	



LEGEND

- MANHOLE
- ⊕ STATION
- ⊕ FIRE HYDRANT
- ⊕ UTILITY POLE
- APPROXIMATE TREE LINE
- FENCE
- PROPERTY BOUNDARY
- INTERMEDIATE CONTOUR 1 FOOT INTERVAL
- INDEX CONTOUR 5 FOOT INTERVAL
- PDI LIMIT
- PDI LIMIT CONTROL POINT
- PROPOSED LAND-BASED SEDIMENT EXCAVATION
- PROPOSED SEDIMENT CAP
- ⊕ PROPOSED POST CONSTRUCTION SEDIMENT CAP CONFIRMATION SAMPLING LOCATION

RD-14 PDI SEDIMENT
 SAMPLE LOCATION ABOVE 1
 PART PER MILLION (PPM)
 TOTAL PCB AROCLOR

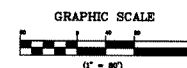
1.3 SAMPLE INTERVAL 0 - 6'
 NO SAMPLE INTERVAL 21'-27' (BELOW SURFACE)
 NO SAMPLE INTERVAL 33' - 39' (NONE DETECTED)

RD-17 PDI SEDIMENT
 SAMPLE LOCATION ABOVE 1
 PART PER MILLION (PPM)
 TOTAL PCB AROCLOR

1.3 SAMPLE INTERVAL 0 - 6'
 NO SAMPLE INTERVAL 21'-27' (BELOW SURFACE)
 NO SAMPLE INTERVAL 33' - 39' (NONE DETECTED)

NOTES:
 1. SAMPLE LOCATIONS HF-03 AND HF-11 FROM PRE-1995 RI WERE SAMPLED AGAIN IN THE 1999 PDI AND THE RESULTS WERE NON-DETECT FOR PCBs.
 2. SAMPLES ABOVE 1 PPM IN THE DELAWARE RIVER WERE ALL BELOW THE SURFACE WITH THE EXCEPTION OF SAMPLES AT S-6 AND S-7.

NORTH



FILE - MD-CI

NO.	DATE	REVISIONS	APPR.	NO.	DATE	REVISIONS	APPR.
1				8			
2				7			
3				8			
4				9			
5				10			

amec EARTH & ENVIRONMENTAL, INC.
 ONE PLYMOUTH MEETING, SUITE 850
 PLYMOUTH MEETING, PA 19462-1308

FOR THE COTTMAN AVENUE PRP GROUP

DESIGNED BY

CHECKED BY

DATE

SCALE

METAL BANK NPL SITE
 PHILADELPHIA, PENNSYLVANIA

PROPOSED SEDIMENT EXCAVATION AND CAP

DESIGNED BY EAM CHECKED BY PM DATE 05-12-04

SCALE AS SHOWN SHEET NO. C-2 SHEET 2 OF 3

AR200011

Southern Area Excavations
Metal Bank Superfund Site
Groundwater and River Monitoring Locations

